Colorado State University – Pueblo Academic Program Assessment Report for AY 2015-2016 **Due: June 1, 2016**

Program:____Chemistry, M.S._____ **Date:** __June 13, 2016_____

Completed by:__Richard Farrer_____

Assessment contributors (other faculty involved in this program's assessment): __none_____

I. Program student learning outcomes (SLOs) assessed in this cycle, processes, results, and recommendations.

A. Which of the program SLOs were assessed during this cycle? **Please include the outcome(s) verbatim from the assessment plan.**	B. When was this SLO last assessed? Please indicate the semester and year.	C. What method was used for assessing the SLO? **Please include a copy of any rubrics used in the assessment process.**	D. Who was assessed? Please fully describe the student group(s) and the number of students or artifacts involved.	E. What is the expected achievement level and how many or what proportion of students should be at it?	F. What were the results of the assessment?	G. What were the department's conclusions about student performance?	H. What changes/improvements to the program are planned based on this assessment?
1: Chemistry MS students will be able to evaluate the scientific literature and to use it in their courses and research.	Spring 2015 by Richard Farrer.	This SLO is assessed through both performance in coursework and performance during thesis committee meetings. I believe that all 500 level	CHEM510(3 student), CHEM592(1 student), CHEM593(1 students), CHEM589(1 students), CHEM599(4 students). Also, all students	All students should receive a grade of A or B in all graded courses. All students should have positive reviews from	Most students progressing toward thesis defense and graduation. Had one student, Lauren Bartolo complete	All students progressing toward completion of degree. Lauren Bartolo has been working full-time and just had her thesis defense. Cheri Armstrong is also working full time and trying to complete her	None.

		courses involve some evaluation of literature; however all MS students begin their coursework in CHEM510, where students are expected to develop a thesis plan. Additionally, in CHEM593 (seminar) and CHEM589 (thesis defense), students are required to demonstrate significant knowledge of scientific literature. For students who take the intership option, CHEM588 is the intership defense. Also, students are	have had at least one committee meeting this past year.	committee meetings – which shows that the student is making the necessary progress toward graduation. All students should receive an A in the thesis defense – showing mastery of their area of study and research. Realistically, some student perform poorly in classwork – many students not prepared for depth, breadthe, and scope of courses and/or	her defense just after the Spring 2016 semester.	research.	

		evaluated during research credits, CHEM599 and CHEM592.		research. Students must maintain a 3.0 GPA to remain in good standing in the program.			
2: Chemistry MS students will be able to effectively communicate scientific research, both their own and information from the research literature, in written and oral fashions.	Spring 2015 by Richard Farrer.	See SLO 1. Coursework, research, and committee meetings are used to guide and direct the student toward mastery in this area, and also for purposed of evaluating the students' growth and abilities in these areas. Additionally, individual research group meetings often require students to discuss their research with	CHEM510(3 student), CHEM592(1 student), CHEM593(1 students), CHEM589(1 students), CHEM599(4 students). Also, all students have had at least one committee meeting this past year.	Formal evaluations occur during courses, committee meetings and thesis defenses. Non-formal evaluations occur in regular group meetings, meetings with advisors, and in everyday laboratory interactions.	All students have shown adequate growth and are satisfactorily progressing towards graduation.	Only Lauren Bartolo produced a seminar (CHEM593) and a thesis defense (CHEM589) this year. Both were excellent. Students also presented during the CSU-Pueblo Research Colloquium. All graduate students have had at least one committee meeting during the 2015-2016 academic year.	None.

		the faculty mentor and other group members – such discussions often lead to analysis of data via the scientific method and through critical thinking. Thus, some of the best areas for growth of the students occurs in non-formal, non-graded settings. Honestly, these are the important times the student needs to succeed – since employment will be more similar to these occasions than courses.					

3: Chemistry MS students will develop and master the scientific problem solving skills required to define and solve basic or applied original scientific questions using the scientific method	Spring 2015 by Richard Farrer.	See SLO 2.	CHEM510(3 student), CHEM592(1 student), CHEM593(1 students), CHEM589(1 students), CHEM599 (4 students). Also, all students have had at least one committee meeting this past year.	Again, all students should complete each course with an A or B, and students should have positive reviews after each committee meeting. However, the committee meetings are also to assist misdirected students back to a path toward graduation. At the time the students choose to defend their thesis/internship, the student must be at or very near	All students showing progress towards mastery of this material.	All students are currently on the thesis plan (as opposed to the internship route). The thesis plan requires students to do novel research and report their findings minimally in a thesis (but many students present work at meetings). In order to complete a thesis, significant research must be completed – and this research must follow the scientific method. Thus, students are well trained in experimental techniques, experimental design, and scientific problem solving.	None.

				mastery of their material, and have a firm grasp on the scientific method and how to apply it to experimental design, data analysis, and production of results.			
4: Chemistry MS students will actively engage in collaborative research or internships and discourse with the faculty in the Chemistry Department and other STEM disciplines as appropriate	Spring 2015 by Richard Farrer.	CHEM592 and CHEM599 – research, CHEM598 – intership. Final assessment at thesis defense (CHEM589) or intership defense (CHEM588).	CHEM592(1 student), CHEM599(4 students), CHEM589(1 students).	Students graded on CHEM599 – thesis research and CHEM588/589 defenses. All other internship/research is pass/fail. All students should be receiving either an A or B in thesis research, and all	Lauren Bartolo just defended her thesis on early June 2016. All students are actively participating in research (except for Cheri Armstrong (who is trying to work full time and complete	Students enrolled in research must actively engage in scientific research. No students on internship plan.	None.

				students should be receiving satisfactory grades in S/U coursework. Students should receive A's for defenses.	graduate research).		
5: Chemistry MS students and faculty will disseminate the prodcts of the Chemistry MS program within the CSU-Pueblo community and communities outside the university in activities using their professional expertise	Spring 2015 by Richard Farrer.	CHEM588, CHEM589, CHEM593, CSU-Pueblo symposia, and regional and national scientific meetings. Also, publication of material in scientific journals.	CHEM589 (1 students) and CHEM593 (1 students). Graduate students presented their research at the CSU-P Student Research Symposium that was held Spring 2016 – four students presented research as this symposium.	Students are expected to receive A's in their defenses. For symposia, students are expected to know the material and confidently discuss their experiments and results. This is typically the case, since faculty ensure that the material is prepared	The symposium presentations were excellent – students were well prepared and able to provide insights into their research and results. Lauren's defense was OK – he received an A for the defense – clearly we would like to	Students progressing to graduation.	None.

				well, and the student is also prepared. Faculty spend many hourse working with students in preparation of presentations.	have seen him perform a little better.		

During the 2015-2015 academic year, two students graduated with a MS in Chemistry. Neither of these students was enrolled in coursework in the past year. There are a couple of students that have completed the coursework and research and are in the process of writing theses. Additionally, two new 3+2 students and one full graduate student will begin in the Fall 2015 semester.

II. Follow-up (closing the loop) on results and activities from previous assessment cycles. In this section, please describe actions taken during this cycle that were based on, or implemented to address, the results of assessment from previous cycles.

A. What SLO(s) did you address? Please include the outcome(s) verbatim from the assessment plan.	B. When was this SLO last assessed? Please indicate the semester and year.	C. What were the recommendations for change from the previous assessment?	D. Were the recommendations for change acted upon? If not, why?	E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations?

This assessment is based on four students that were enrolled in coursework as part of the Chemistry MS program. One of the students, Lauren Bartolo, completed and defended her thesis in May – her finished thesis should be completed in the next two weeks. One other student has chosen to leave the 3+2 program for personal reasons. Because the assessment is based on such a small population, no significant changes will be made to the program unless a significant issue was found. Historically, students that successfully complete their MS degrees have faired well in the job market. The assessment plan for the Chemistry and Biochemistry MS will undergo its own assessment as time allows.

COLORADO STATE UNIVERSITY - PUEBLO
GRADUATE PROGRAMS IN NATURAL SCIENCES

MASTER OF SCIENCE IN CHEMISTRY PROGRAM
DEGREE PLAN

The courses outlined below will constitute the course of study leading to the graduate degree Master of Science in Chemistry for:

Student Name:_____ Student PID.#:_____

Option: _____Non Thesis _____Thesis

Program Plan: _____Regular _____3 + 2

Prefix Number	Title	Credit Hours	Substitute Transfer	Semester & Year	Grade
CHEM510	*Foundations in Graduate Studies*	*3*		*F*	

	(Approved by Signature)	Date
Student:	_____	_____
GraduateAdvisor:	_____	_____
Committee Member 1:	_____	_____
Committee Member 2:	_____	_____
Program Director:	_____	_____
Department Chair:	_____	_____
Dean of CSM:	_____	_____

MASTER OF SCIENCE IN CHEMISTRY THESIS PLAN

Student Name: _____ **PID**: _____

MS Research Advisor: _____

Committee Members: _____

_____

Emphasis Area: _____

Title: _____

_____

Please provide a brief description of the research project (use as much space as necessary; have it signed in the sequence given)

SIGNIFICANCE

BACKGROUND

HYPOTHESIS:

SPECIFIC AIMS

EXPERIMENTAL DESIGN AND METHODOLOGY

ANTICIPATED RESULTS

REFERENCES

Signature **Print** **Date**

1. Student_____
2. Advisor_____
3. Committee member_____
4. Committee member_____
5. Department Chair_____
6. Dean CSM_____
7. MSANS Director_____

Revised 15Oct2015
RAF – MS CHEM

Chemistry Department
Master of Science in Chemistry

Graduate Advisory Committee Meeting Progress Report

To be filed with the Program Director, student and Advisor. Check: Thesis ☐ Internship ☐ 3+2 ☐

Student Name: _____ Date of meeting:_____

Title: _____

_____

	Satisfactory	Satisfactory with deficiencies	Unsatisfactory
1. _____ Graduate Advisor			
2. _____ Committee Member 1			
3. _____ Committee Member 2			

Each committee member signs and checks the appropriate box indicating the overall evaluation. The thesis advisor summarizes the major outcomes of the meeting below, discusses it with the student, and the students signs at the bottom.

Familiarity with Background Literature:

Experimental Design:

Communication of Project Design and Progress:

Progress Summary:

Action Plan for Next Semester:

_____ _____

Student signature Date